

REMARKS

Claims 1 - 12 remain active in this application. No new matter has been introduced into the application.

Claims 6 and 7 have been rejected under 35 U.S.C. §102 as being anticipated by Hibbs et al. or Sussmeier, claims 1 - 7 have been rejected under 35 U.S.C. §103 as being unpatentable over Harshbarger, Jr., et al. (hereinafter "Harshbarger") and claims 8 - 12 have been rejected under 35 U.S.C. §103 as being unpatentable over . These grounds of rejection are respectfully traversed for the reasons previously submitted, which are hereby fully incorporated by reference, and the further remarks provided below.

Initially and in regard to all three grounds of rejection, it is noted that the grounds of rejection based on Hibbs et al. and Sussmeier are repeated from the previous action and the ground of rejection based on Harshbarger is substantially repeated from the previous action but with the statutory basis changed from 35 U.S.C. §102 to 35 U.S.C. §103. While the evidentiary showing necessary to support a rejection under either of these sections of the Statute is quite different, the requirements of 35 U.S.C. §103 is no less stringent than under 35 U.S.C. §102 and (under 35 U.S.C. §103) all recitations of the claims must be answered by the prior art applied as evidence of unpatentability or shown by a clear and convincing line of reasoning to be obvious within the level of ordinary skill in the art at the time the invention was made as discerned from the applied prior art.

Further, a principal meritorious effect of the invention is to provide an alternative to known difficult and expensive methods for quantitatively evaluating optical resolution of an optical system (see page 2, line 23+) such that the resolution of the optical system including an image sensor (which,

itself, imposes some limitation on resolution) may be quantitatively determined by simple, rapid and, especially, non-critical inspection; allowing testing even in the environment of an intended application. That is, the invention produces large and readily evident artifacts (Moire' patterns which extend over the entirety of target sub-fields) from which the resolution of an optical system with sensor-limited resolution may be quantitatively determined with such ease that the invention may even be used for rapid screening of the suitability of optical systems to perform properly in an intended application (see page 3).

Accordingly, it is respectfully submitted that the Examiner may not properly gloss over recitations of the claims or accord constructions to them contrary to the clear and explicit terms thereof. As will be demonstrated below, each of the stated grounds of rejection does so at points which amply demonstrated that the claims are not, in fact, anticipated by or obvious over the reference relied upon.

In regard to Hibbs et al., it is respectfully submitted that Hibbs et al. is directed to determination of effects of lithographic exposure dose rather than resolution and, while the targets may have features of differing size, the features are produced at a common pitch; presumably to eliminate any possibly effect of field size. Moreover, the "fields" of interest are each of a given transparency or grey scale and otherwise featureless (except for the "prior art" pattern of Figure 1 which is clearly at a constant pitch - see column 3, line 59) whereas the independent claims of the application clearly recite that the sub-fields, in accordance with the invention, have "a progression of image feature size and pitch" (claims 1 and 7).

That is not
true?
where?

Further, the claim recitation continues to recite

that the "progression of image size and pitch"
"encompassing the resolution of said imaging system".
In regard to this recitation the Examiner correctly
notes that the pitch of features (or fields) is *below*
the resolution of the exposure system (e.g. such that
features cannot be spatially resolved and are thus
rendered as a grey scale tone which the Examiner then
inexplicably determines to "encompass" the spatial
resolution of the imaging system. In fact, the
→ explicit disclosure, bridging columns 3 and 4, on which
the Examiner relies could not possibly more directly
contradict the inherency which the Examiner asserts.
If a feature is disclosed to be of a size which is
below the spatial resolution of an optical system and
must be so in order for the disclosed arrangement to
function in the manner discussed, it logically cannot
answer the recitation of "respective sub-fields of said
plurality of sub-fields providing a *progression* of
image feature size and pitch *encompassing* the spatial
resolution of said imaging system" (emphasis added).
Furthermore, the use of feature size and pitch below
the resolution limit of the optical system such that
the features are rendered as grey scale tones clearly
precludes the production of a Moire' pattern or
fringes, as claimed. Therefore the Examiner's
assertion of inherency is clearly incorrect and
① improper and Hibbs et al. does not and cannot
anticipate any claim in the application and the
statement of the rejection is, on its face, erroneous
and self-contradictory.

In regard to Sussmeier, and the same recitations
of the claims, test targets are shown in Figures 2 - 4
and discussed at column 5, line 35 to column 6, line
38. The test target for dynamic range is shown in
Figure 2 which has a uniform pattern of features (e.g.
if a field is taken to be a group of adjacent features
of differing density, the features are of a common size

or if an area of a given density is considered as a sub-field, there are no features within any sub-field) and clearly must have features resolvable without the production of artifacts in order to test dynamic range and thus cannot "encompass" the spatial resolution of the imaging system. As to the test patterns of Figures 3 and 4 (each consisting of a regular pattern of parallel lines of a *single size and pitch* selected to be equal to the feature size the optical system is expected to resolve in order to test contrast resolution and distortion. See column 6, lines 32 - 38. Thus, in regard to Sussmeier, the Examiner confuses spatial resolution with contrast resolution (e.g. the brightness modulation produced from contrasting features at a given resolution and corresponding feature size and pitch) and glosses the fact that Figure 2, however interpreted as to sub-fields and features, does not have any variation in feature size or pitch and that Figures 3 and 4 do not have sub-fields or any variation in feature size or pitch and the fact that variation in size or pitch to provide a "progression", particularly "encompassing" the imaging system resolution would preclude testing for the particular image parameters of interest.

② Therefore, Sussmeier does not and cannot anticipate any claim in the application under 35 U.S.C. §102 and, even under 35 U.S.C. §103, any modification to answer these recitations of the claims would be improper since operation of the arrangement of Sussmeier in the intended manner would be precluded. See *In re Gordon*, 221 USPQ 1125 (Fed. Circ., 1984). Additionally, although Sussmeier is directed to "qualifying various camera systems", close inspection and/or measurement of the images is required and no large and obvious artifacts such as the claimed Moire' patterns or fringes are produced and thus Sussmeier does not lead to an expectation of success in providing quantitative

(3)

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objection was
for 8-12 Not
6-12

evaluation of spatial resolution by inspection and thus does not provide evidence of a level of ordinary skill in the art which would support a conclusion of obviousness. The deficiencies of Sussmeier are not mitigated by the additional teachings of Neyman which, is relied upon by the Examiner merely for the teaching of applying numerical indicia to an image in regard to claims 8 - 12. However, in regard to claims 6 - 12, it is respectfully pointed out that Neyman appears to disclose nothing of relevance to resolution "referred to an object plane of said imaging system" as recited in claim 6, as to which Sussmeier is also deficient.

In regard to Harshbarger, the Examiner admits that Harshbarger "does not specifically disclose determining resolution of the imaging system from feature size and pitch by inspecting the subfields" and takes official notice that "it is well known ... for an operator to inspect an image for state of image degradation, or the presence of noise or other undesired patterns ... a to take measures to correct such degradation, which inspection would give the operator information about the performance of the camera ... resolution being one of the parameters of measurement of performance".

(4)

While the statement of the subject matter of which official notice is taken may be sufficiently broad that official notice is properly taken, by the same token, the breadth of the Examiner's assertion is so great that the official notice taken is not probative of the issue of obviousness of the subject matter actually recited in the claims.

Specifically, Harshbarger is directed to the detection of the quality of an image produced by a display device and not the quality or any parameter of a captured image for evaluation of the imaging system. Moreover, Harshbarger explicitly recognizes that the displayed image degradation of interest is generally not visible (column 1, lines 53 - 60) and it is an

objective of Harshbarger to eliminate the subjectivity of a human evaluation of the image (column 2, lines 32 - 34); raising, at the outset, a question as to the applicability or analogousness to Harshbarger of the subject matter of which official notice is taken and the propriety of any proposed modification of Harshbarger to answer the recitations of the claims under *In re Gordon, supra*, since the operation of Harshbarger in the intended manner would be precluded by such a modification.

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Moreover, Figure 4F is indicated to be a preferred test pattern for determining resolution and, contrary to the Examiner's broad assertions that Harshbarger disclosing "all claimed subject matter", does not answer the claim recitations as to test patterns having "a plurality of sub-fields", "respective sub-fields ... providing a progression of image feature size and pitch encompassing the spatial resolution of said imaging system", (as discussed above in regard to Hibbs et al. and Sussmeier) or using such features of a target "to produce a *captured* image" or "inspecting said *captured* image *for presence or absence of Moire' patterns in sub-fields*" (emphasis added). Figure 4F is indicated to be for testing resolution but does not have sub-fields or any progression of size or pitch, especially encompassing the resolution of the imaging system or a camera.

Figure 4H, relied upon by the Examiner, while showing bars of differing numbers and width, does not include "sub-fields" providing a "progression" of feature "size and pitch" (the "progression being important in the context of the claimed inventions since the nature of the Moire' patterns leads the eye to the sub-field of interest and associated quantitative information where no Moire' pattern is present) and certainly not approaching, much less encompassing, the resolution of either the display or a

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camera as is particularly evident from comparison with Figure 4F and thus clearly incapable of providing "Moire' patterns" near the resolution limit. Further, in the environment of Harshbarger, while a user might inspect the displayed image, a user would not inspect a captured image (a point also glossed over in the official notice taken since reference is merely made to "inspecting an image" while the captured image may never exist as a viewable image in Harshbarger) and no provision is made in Harshbarger for a user to do so. Therefore, Harshbarger, even augmented by the subject matter as to which official notice is taken (which augmentation is, in any case, improper as pointed out above) falls far short of answering the subject matter actually claimed, even in claim 1 due to the Examiner effectively ignoring explicit recitations of that claim.

As to independent claim 6 and the dependent claims, the Examiner similarly fails to properly consider the actual subject matter claimed. For example, the statement of the rejection of claims 2 and 3 merely refers to the statement of the rejection of claim 1, as to claims 4, the passage cited by the Examiner merely refers to the need for camera alignment but does not address the recitation of obtaining information from the shape of Moire' patterns (which, in any event, Harshbarger does not produce or detect). As to claim 5, the Examiner merely refers to optional printer 50 which column 7, lines 59 - 60, indicate to provide hard copy of "display evaluation results" (emphasis added) and not the captured image which would, if reproduced by a printer, at best, imperfectly reflect the displayed image. As to independent claim 6, the Examiner merely asserts that Harshbarger teaches detecting resolution by inspection of Moire' fringes, a plurality of sib-fields, a plurality of features in each sub-field, and the sub-fields having a progression

Captured image
vs
displayed image

of sizes and pitches of features, all of which have been shown to be absent from the teachings or suggestions of Harshbarger and as to which Harshbarger can provide no probative evidence of the level of ordinary skill in the art or lead to an expectation of success in achieving a quantitative evaluation of resolution by simple inspection of a captured image.

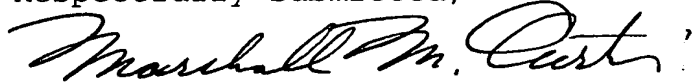
In view of the foregoing, it is respectfully submitted to be amply evident that the Examiner has not properly understood or considered the claimed subject matter and has incorrectly evaluated the references applied. In so doing, the Examiner has failed to make a *prima facie* demonstration of anticipation or obviousness of any claim. The statements of the rejection are, in turn, self-contradictory, reliant upon equating of demonstrably unrelated subject matter or reliant upon taking official notice of subject matter not properly applicable or even probative of the issue of obviousness while also attributing teachings or suggestions to the reference not, in fact, contained therein and glossing over or ignoring explicit recitations of the claims which support the meritorious functions of the invention not realized or even contemplated by the prior art relied upon. Therefore, it is respectfully submitted that all stated grounds of rejection are clearly in error and reconsideration and withdrawal of the same is respectfully requested. Should any issue be seen to remain upon consideration of the above remarks, an interview with the Examiner is requested to more expeditiously resolve the same and it is respectfully requested that the Examiner contact the undersigned by telephone at the number provided below so that such an interview can be arranged.

Since all rejections, objections and requirements contained in the outstanding official action have been fully answered and shown to be in error and/or inapplicable to the present claims, it is respectfully

submitted that reconsideration is now in order under the provisions of 37 C.F.R. §1.111(b) and such reconsideration is respectfully requested. Upon reconsideration, it is also respectfully submitted that this application is in condition for allowance and such action is therefore respectfully requested.

If an extension of time is required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,



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